



1 + 1 = 3?

Referinghausen is, and has been...



a place to be **young**

[1961]



[1963]



a place to **grow up in,**

[1920]



[1955]



a place to **raise a family,**

[1944]



[1935]

and a place to **grow old in**



[1980]

<https://www.mdpi.com/2071-1050/14/8/4747/htm>

ASSESSMENT OF THE DEVELOPMENT OF FOREST-BASED BIOECONOMY IN EUROPEAN REGIONS L. Barañano et al.

can a bioeconomy facilitate competitiveness, differentiation, and sustainability?
Rather than consider national or transnational land tracts this study looks at
regions, defined as “territorial units,” as the ideal scale for management and study

territories of study-

North Karelia, Finland
North Rhine-Westphalia, Germany
Basque Country, Spain

In particular, the multi-level perspective (MLP) on socio-technical transitions posits that transitions occur through interactions within and between the following three analytical levels: (i) *niches*, or spaces where innovative activity takes place and where protection is offered from prevailing rules; (ii) *regimes*, or the socio-technical systems which include the network of actors and social groups, the binding rules, and the required technical-material elements; and (iii) a *socio-technical landscape*, which includes exogenous events and trends (e.g., demographic vicissitudes, macro-economic tendencies, political developments, wars and crises, cultural and societal values, climate change, etc.) [8]. Since transitions are often defined as shifts from one regime to another, the regime analytical level is of primary interest; thus, the niche and landscape levels are seen as derived concepts, since they are both defined in relation to the regime [10].

**niche
regime
socio-technical landscape**

spaces for innovation, protected from the restrictions of prevailing rules
socio-technical systems including: actors, social groups, binding rules
exogenous events and trends

what realm does architecture occupy? It seems as though it is positioned to address each of these three analytical levels

reducing our strong and deep-rooted dependence on fossil fuels for energy and materials [1]. More precisely, the bioeconomy, defined as “the production of renewable biological resources and the conversion of these resources and waste streams into value added products, such as food, feed, bio-based products and bioenergy” [2], has repeatedly

what is architecture’s role in the bioeconomy? Can architectural design and novel programmatic adjacencies be part of this innovation?

Referinghausen is already a part of this development, though not in a formal manner under the guidance of the European Forest Institute (EFI). Can Referinghausens biogas fuel supply begin to address other human needs like: food, feed, and bio-based products

<https://www.bbc.com/travel/article/20210314-waldeinsamkeit-germanys-cherished-forest-tradition>

WALDEINSAMKEIT “solitude of the forest”

Also translated as forest loneliness – the intricacy and specificity of German words might be an interesting entry point to begin investigating potential programs.

wanderlust a desire to travel
heimat a emotional tie to one’s homeland
fernweh a longing for far-off places

33% of the German landscape is forested
1/2 of this land is state-owned

Germans have a wonderfully evocative dictionary of words with no direct English equivalent

Research published last summer by the **European Forest Institute** in Bonn found that visits to a monitored tract of forestry in **North Rhine-Westphalia** during the first and second lockdowns experienced an unprecedented explosion of visitors, with forest recreation doubling. The authors concluded that the coronavirus-induced boom revealed that Germans are once again embracing forest solitude and that forests remain a critical infrastructure for national public health and societies at large.

“In our recent study, visitors said finding tranquility was by far the number one motivation to go to the forest,” European Forest Institute researcher Jeanne-Lazya Roux told me. “Another new study we are working on shows there is a renaissance in valuing forests for their spiritual attributes, or re-spiritualisation of the forest, as we call it.”

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there is a renewed interest in the forest – this is partially a reaction against the pandemic, but it also represents a longer running trend: a reaction against an increasingly digital and virtual world

the forest is (once again) being seen as a place of sanctuary, a non-denominational religious space; it is not just a place to nurture the human soul, but a living organism with its own soul as well

The Abbey in the Oakwood, Caspar David Friedrich [1809-10]





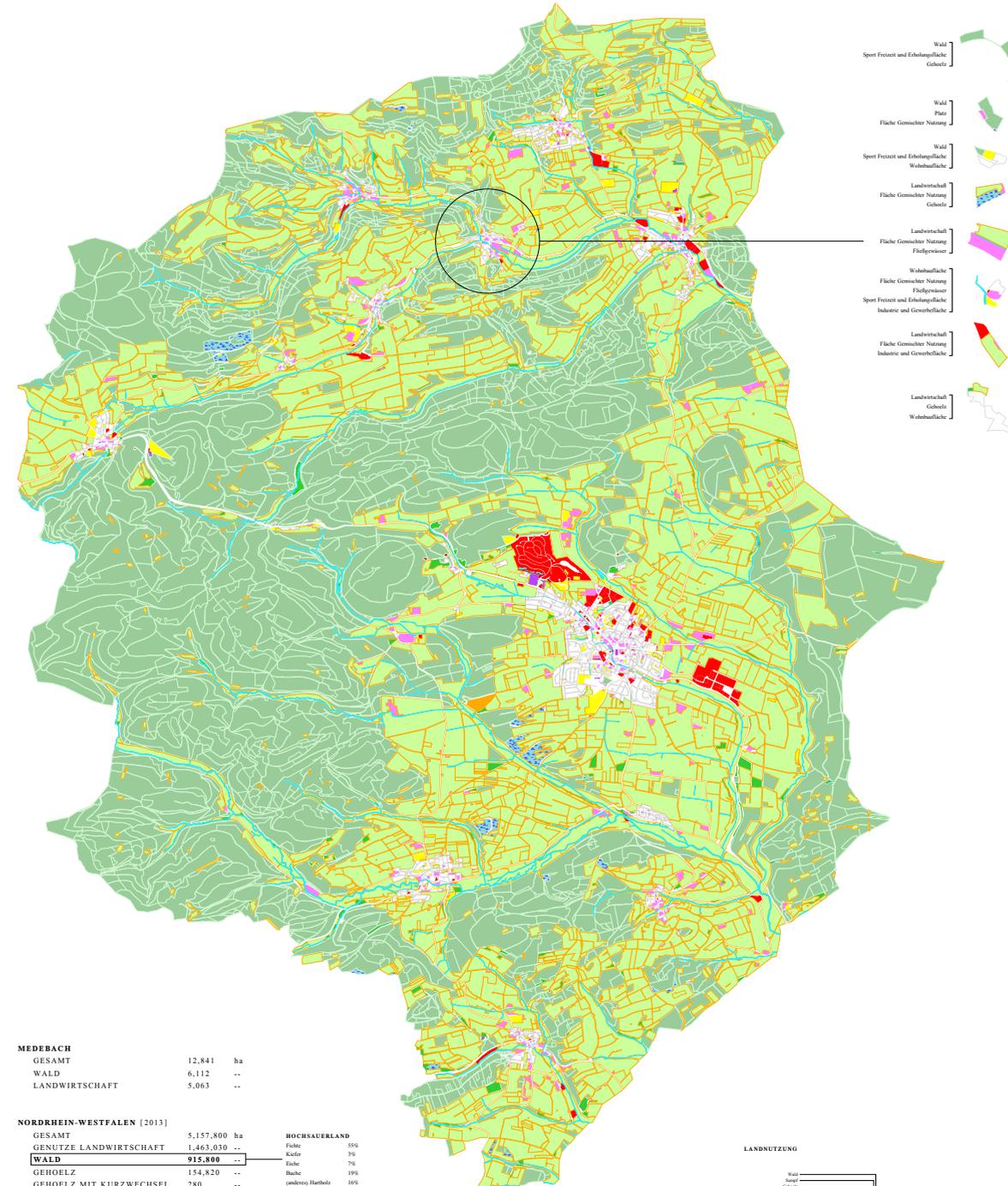






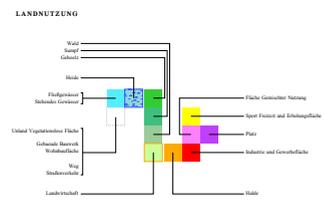
MEDEBACH LANDNUTZUNG

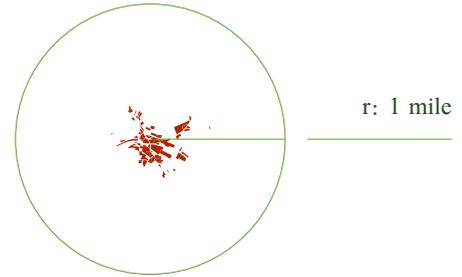
Medebach Land Use



MEDEBACH		
GESAMT	12,841	ha
WALD	6,112	--
LANDWIRTSCHAFT	5,063	--

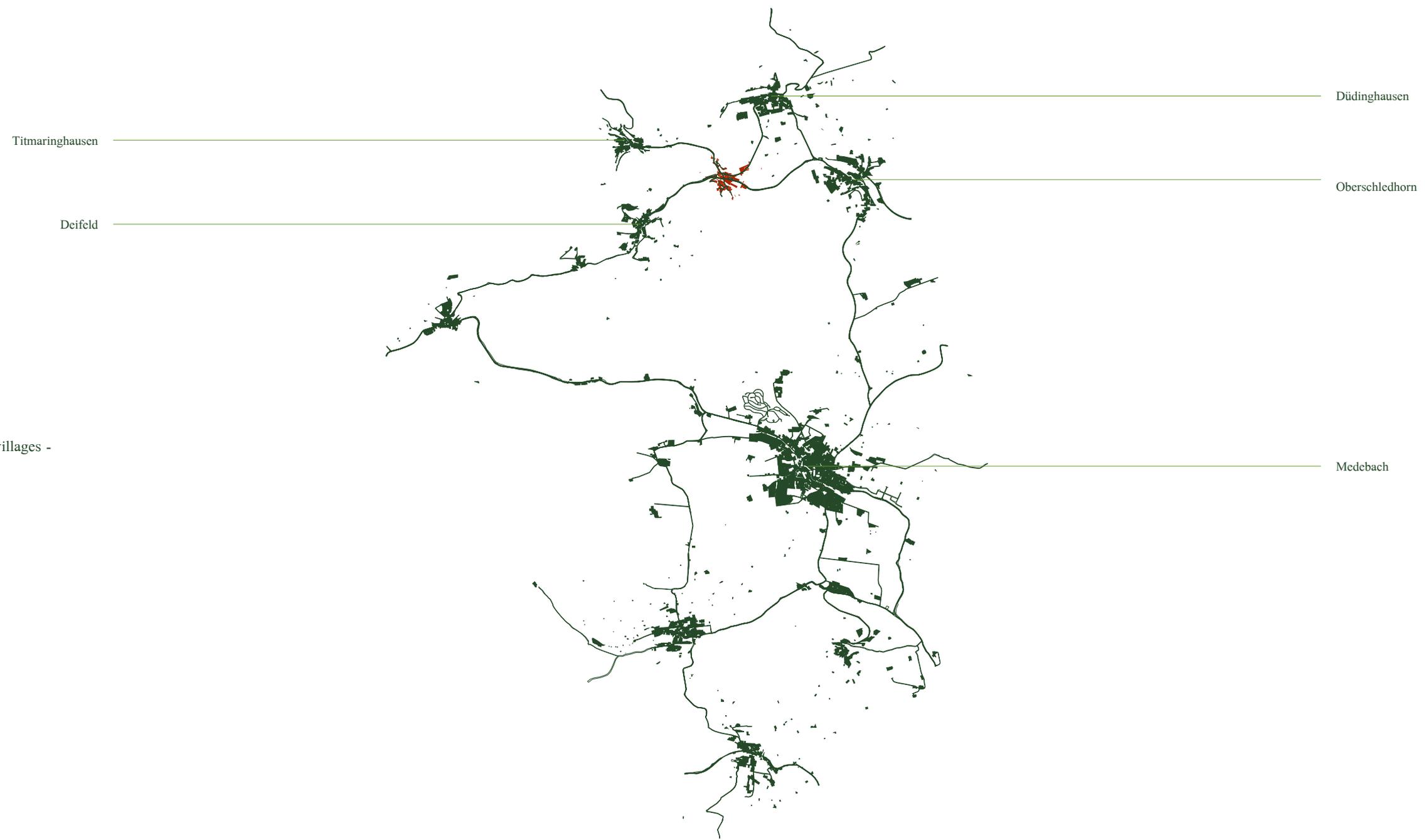
NORDRHEIN-WESTFALEN (2013)			HOCHSAUERLAND		
GESAMT	5,157,800	ha	Fleisch	95%	
GENUTZTE LANDWIRTSCHAFT	1,463,030	--	Kühe	9%	
WALD	915,800	--	Eiche	7%	
GEHÖELZ	154,820	--	Buche	19%	
GEHÖELZ MIT KURZWECHSEL	280	--	andere/Herfische	16%	





Referinghausen
01
- a rural village -

Medebach
02
- a constellation of villages -



The system

3

- a local land network connected by boundaries -



Parcels

The historic economy

04

- Landwirtschaft [agriculture] -



Over time...

05

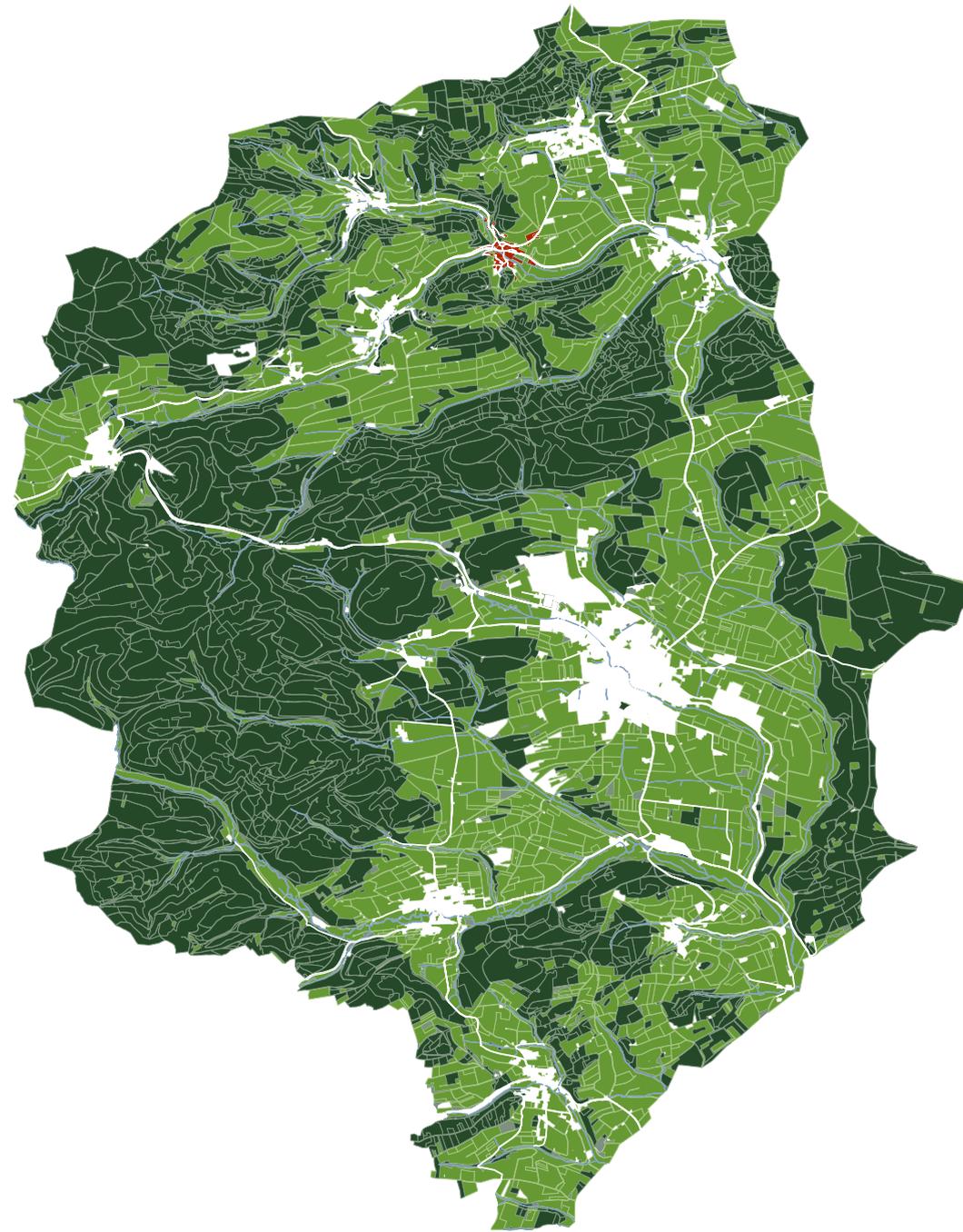
- Forstwirtschaft [Forestry] -



Dichotomous landuse

06

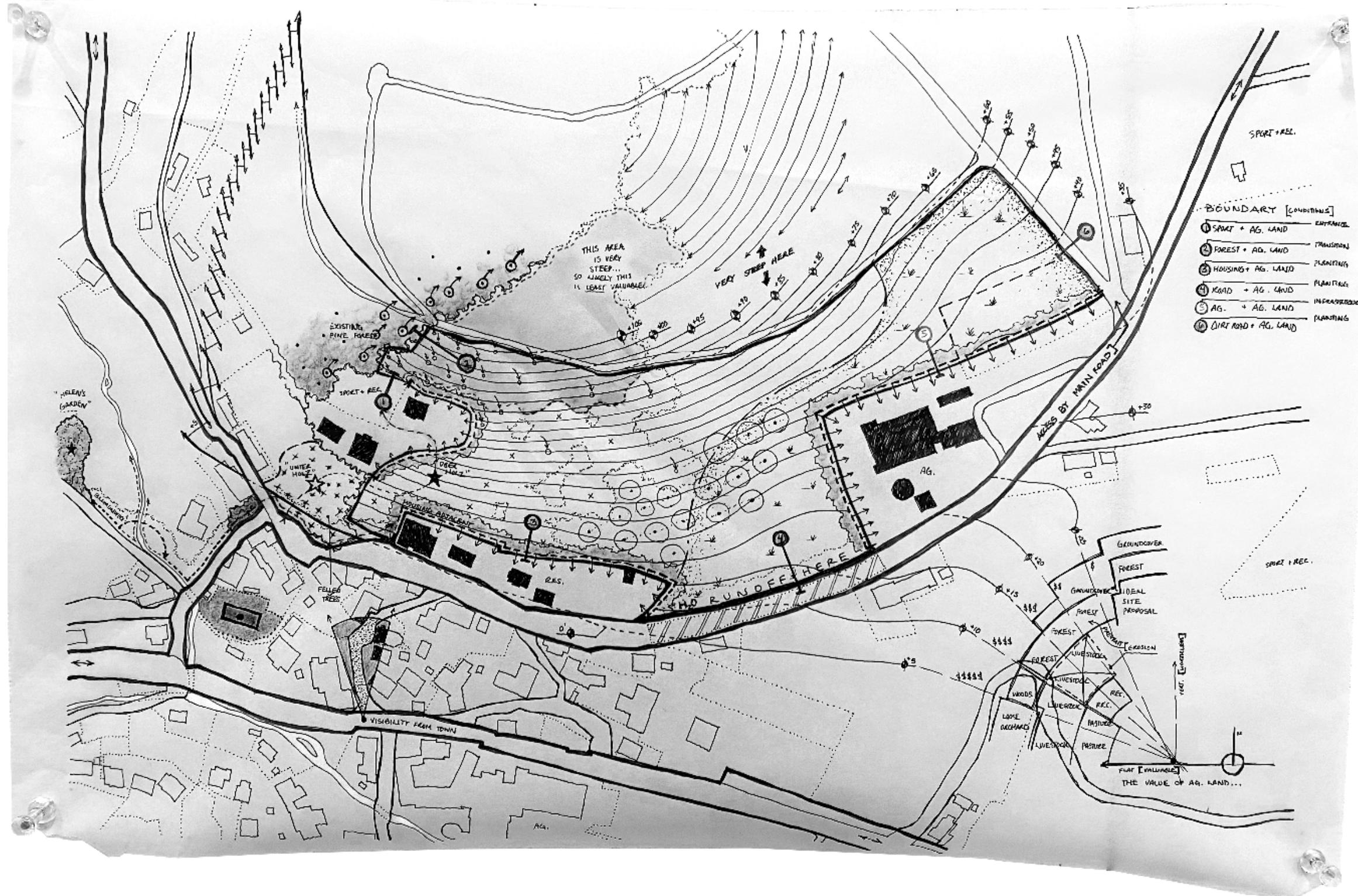
- a cultural, biological, and economic relationship -





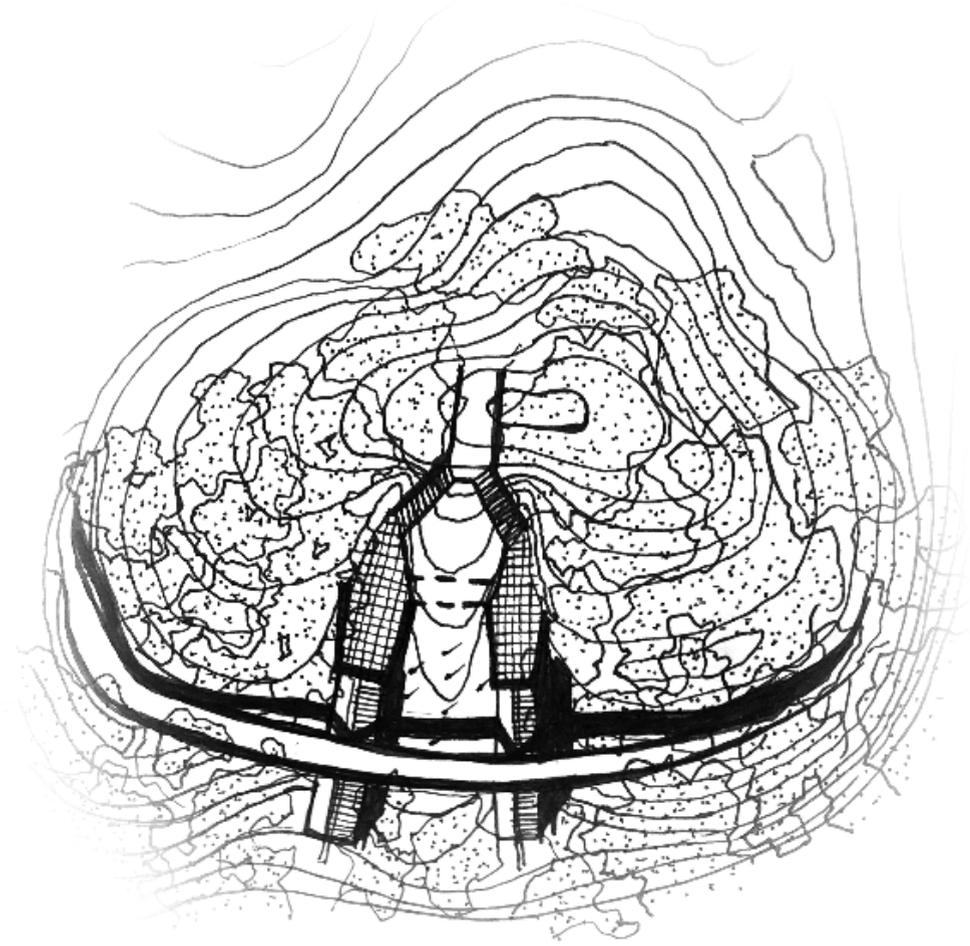
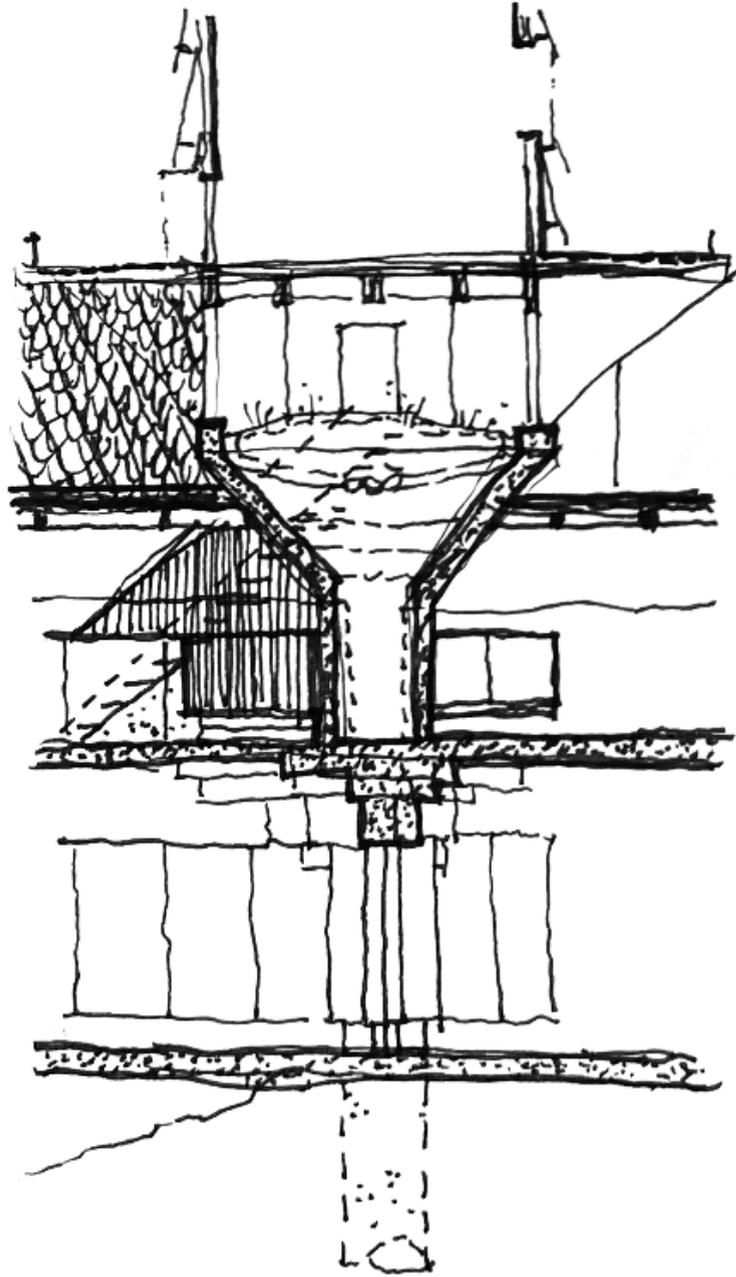


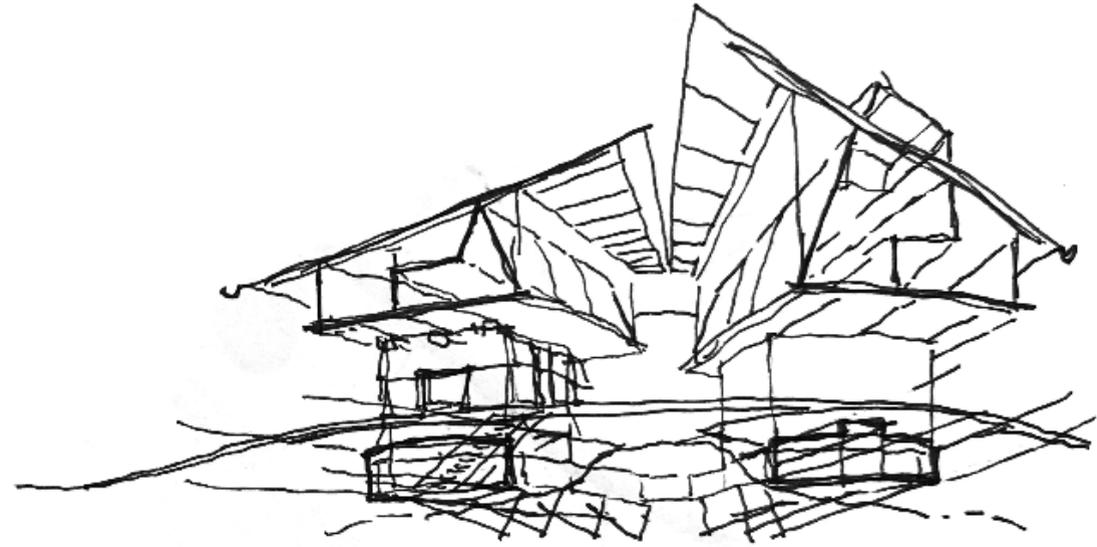
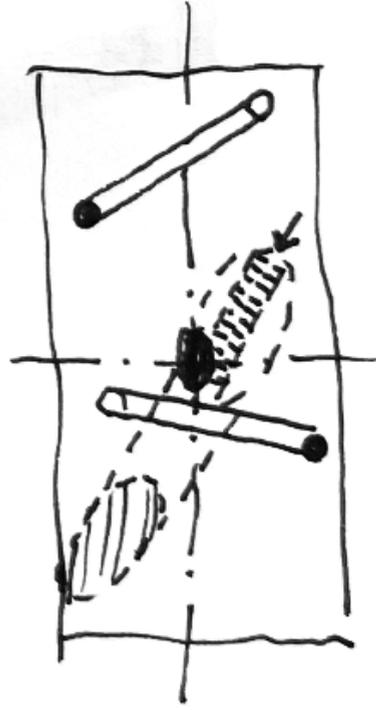
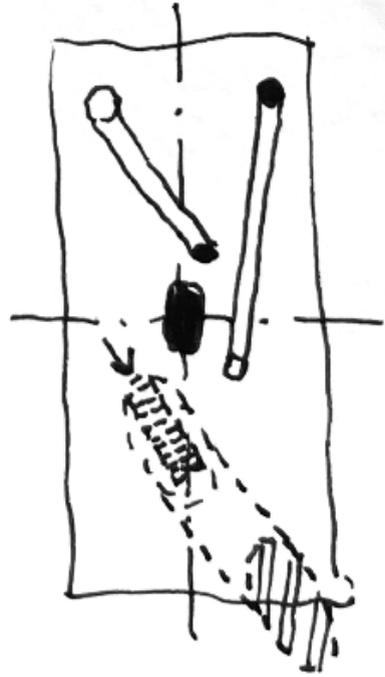
Site Logic



Lighting in the forest









Steimel
547m

Town
480m

500 feet

100

0

SITE USAGE & FEATURES

SITE PLAN: 1'-0" = 1/32"

USAGE

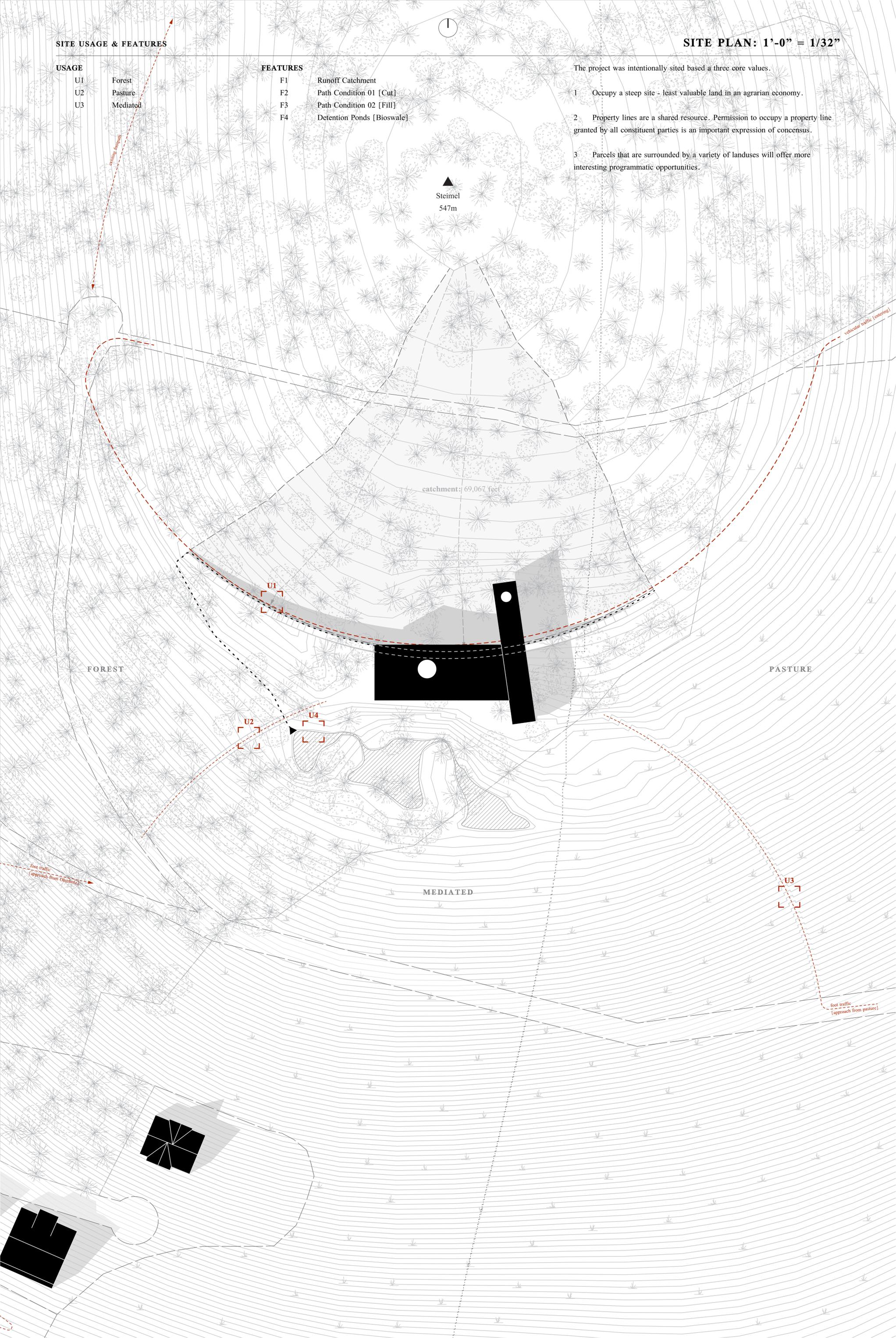
- U1 Forest
- U2 Pasture
- U3 Mediated

FEATURES

- F1 Runoff Catchment
- F2 Path Condition 01 [Cut]
- F3 Path Condition 02 [Fill]
- F4 Detention Ponds [Bioswale]

The project was intentionally sited based a three core values.

- 1 Occupy a steep site - least valuable land in an agrarian economy.
- 2 Property lines are a shared resource. Permission to occupy a property line granted by all constituent parties is an important expression of consensus.
- 3 Parcels that are surrounded by a variety of landuses will offer more interesting programmatic opportunities.



Steimel
547m

catchment: 69,067 feet

FOREST

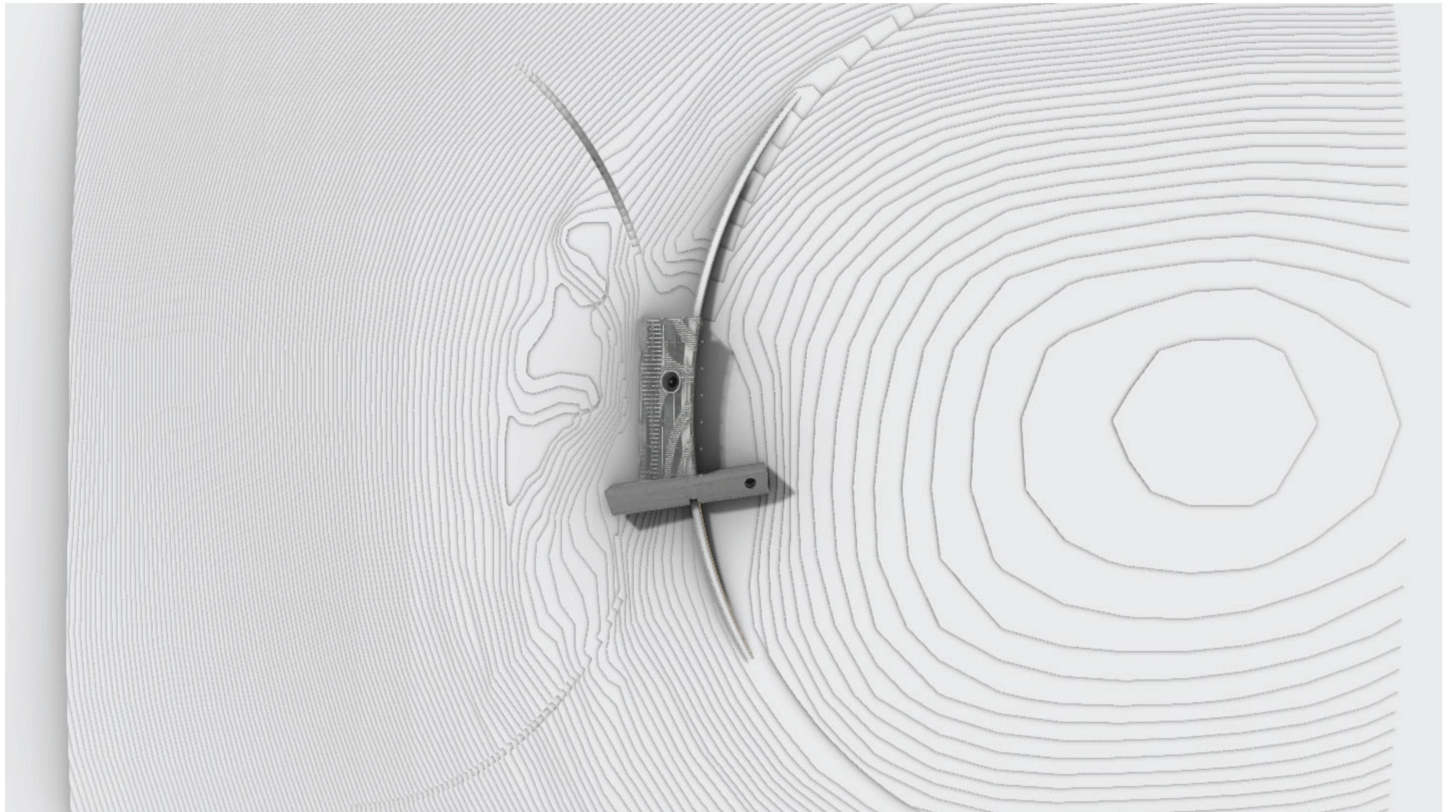
PASTURE

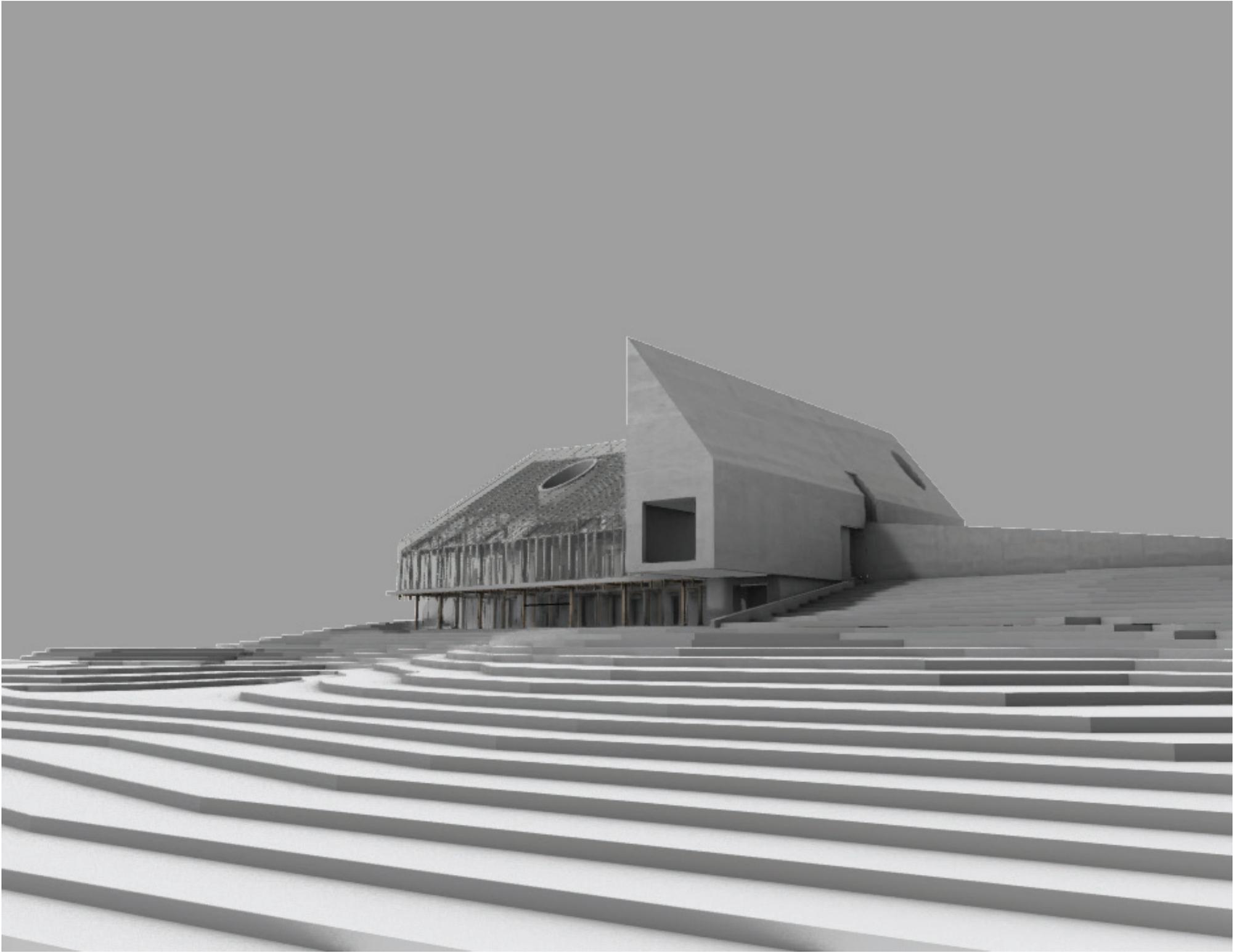
MEDIATED

foot traffic
[approach from Coleridge]

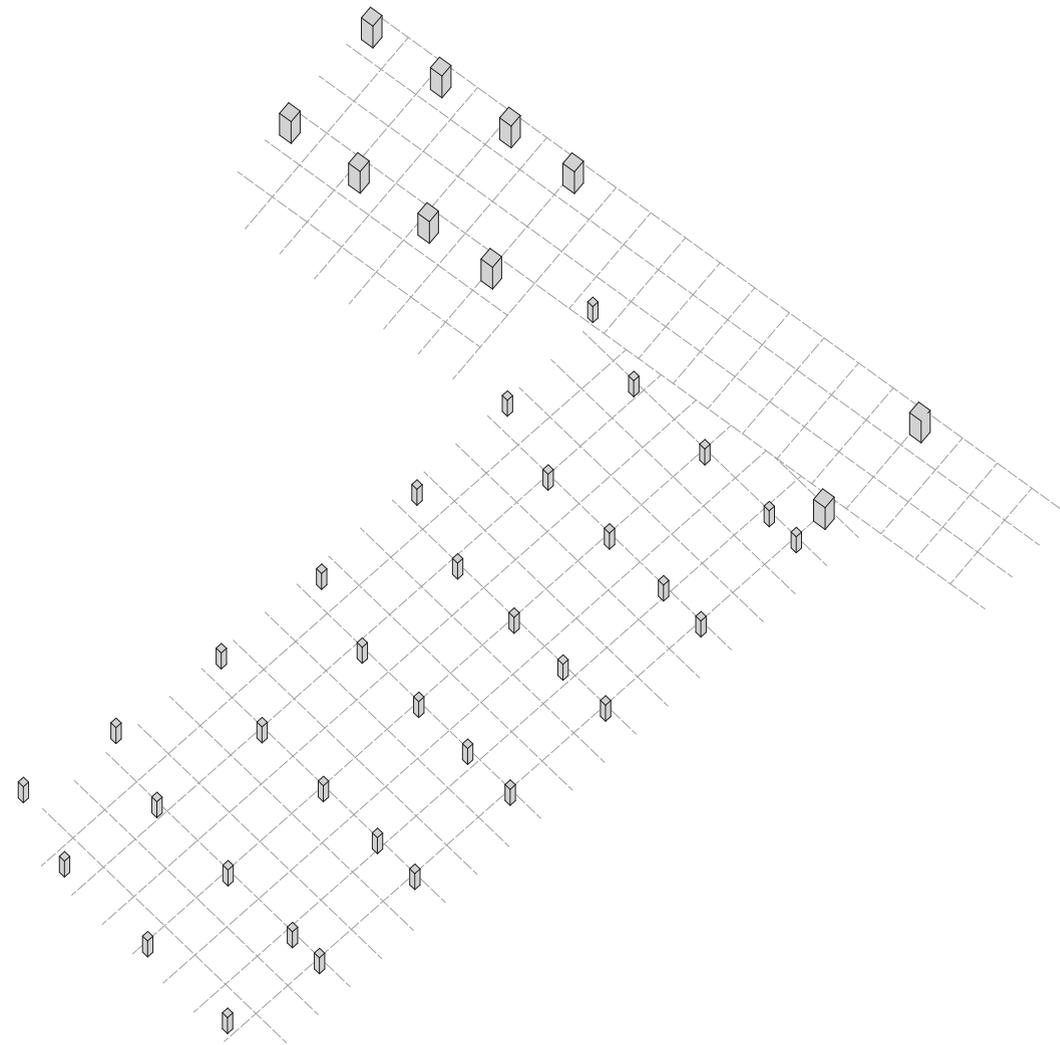
foot traffic
[approach from pasture]

vehicular traffic [concessions]

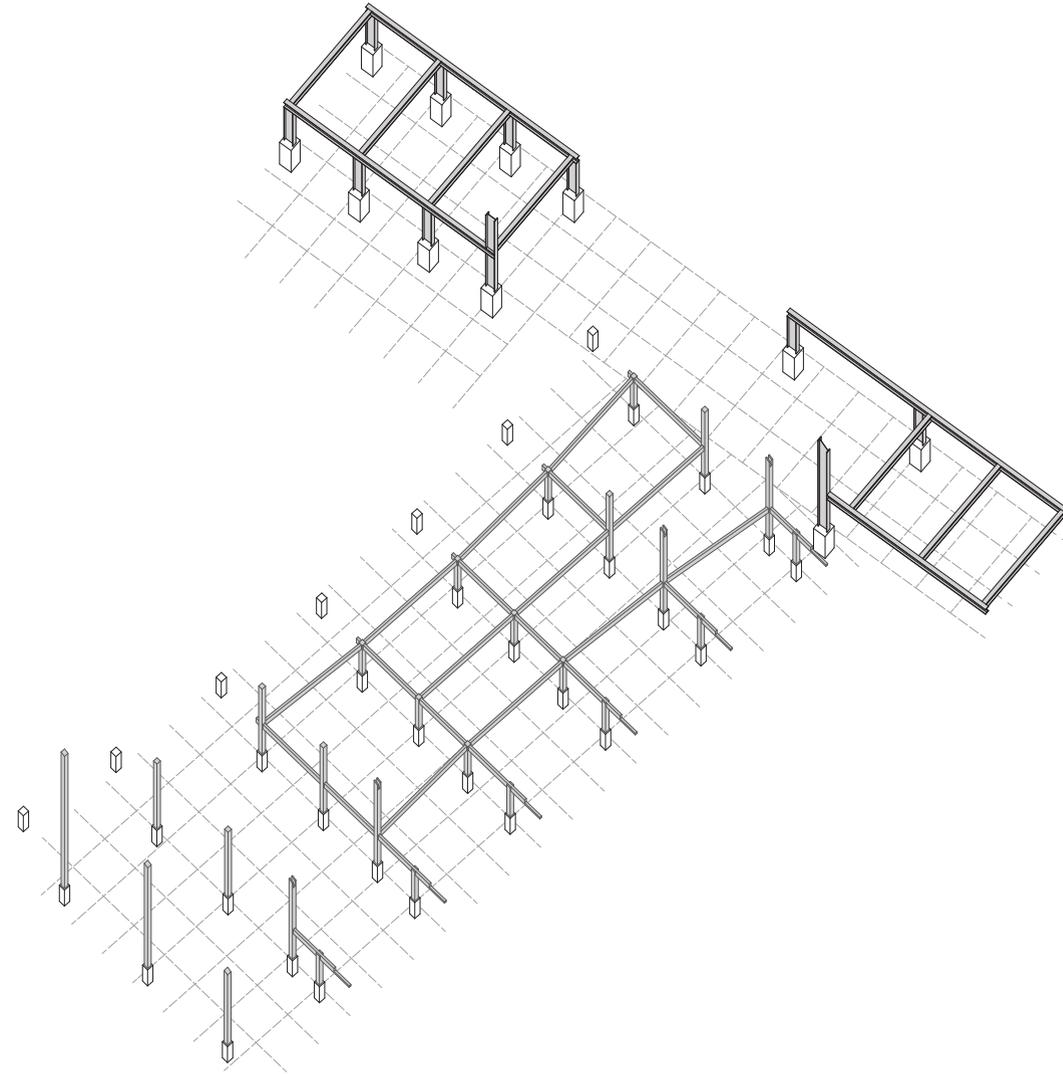




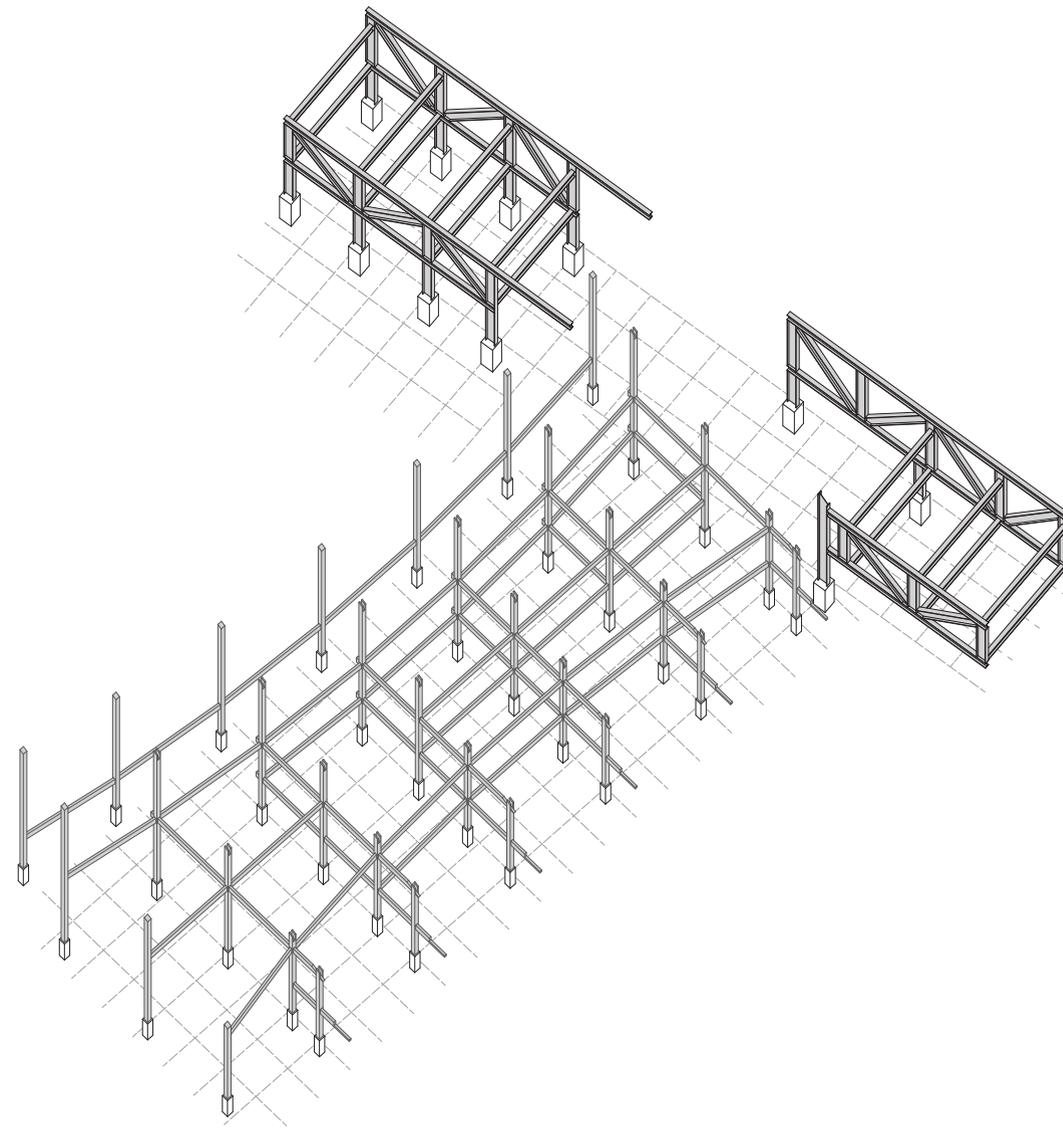
Structure
01
- footings -



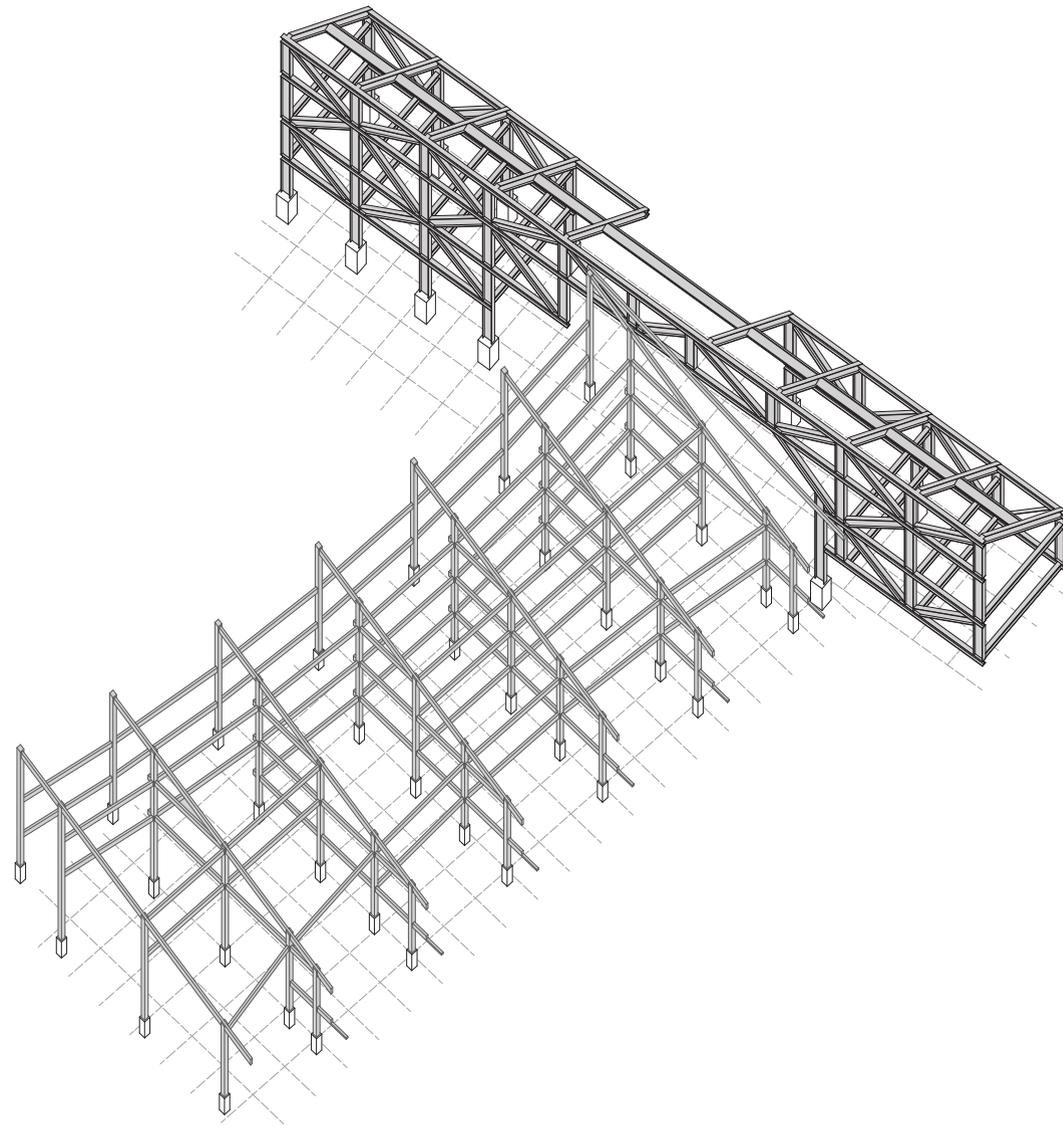
Structure
02
- level 1 -



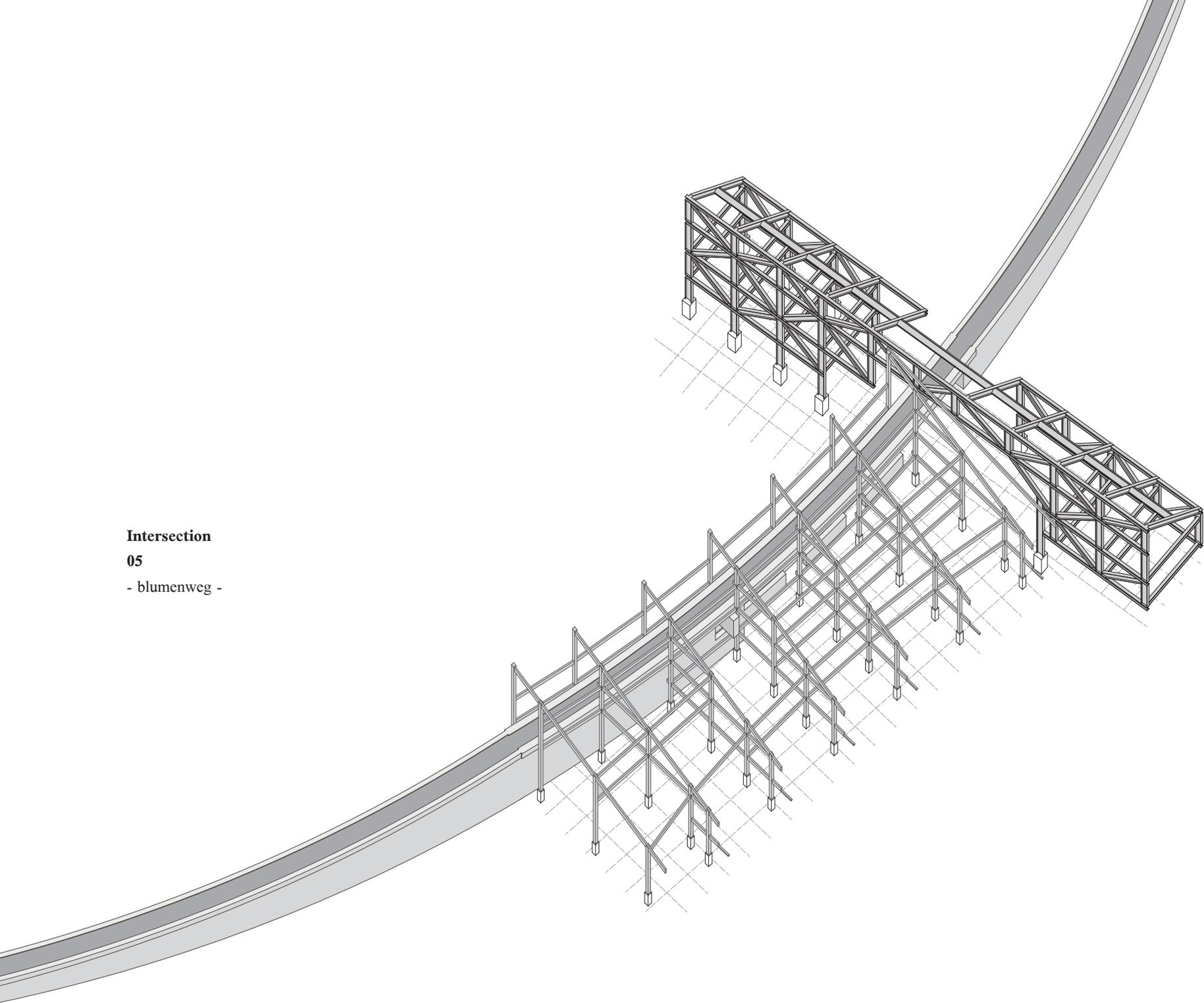
Structure
03
- level 2 -



Structure
04
- level 3 & roof -



Intersection
05
- blumenweg -

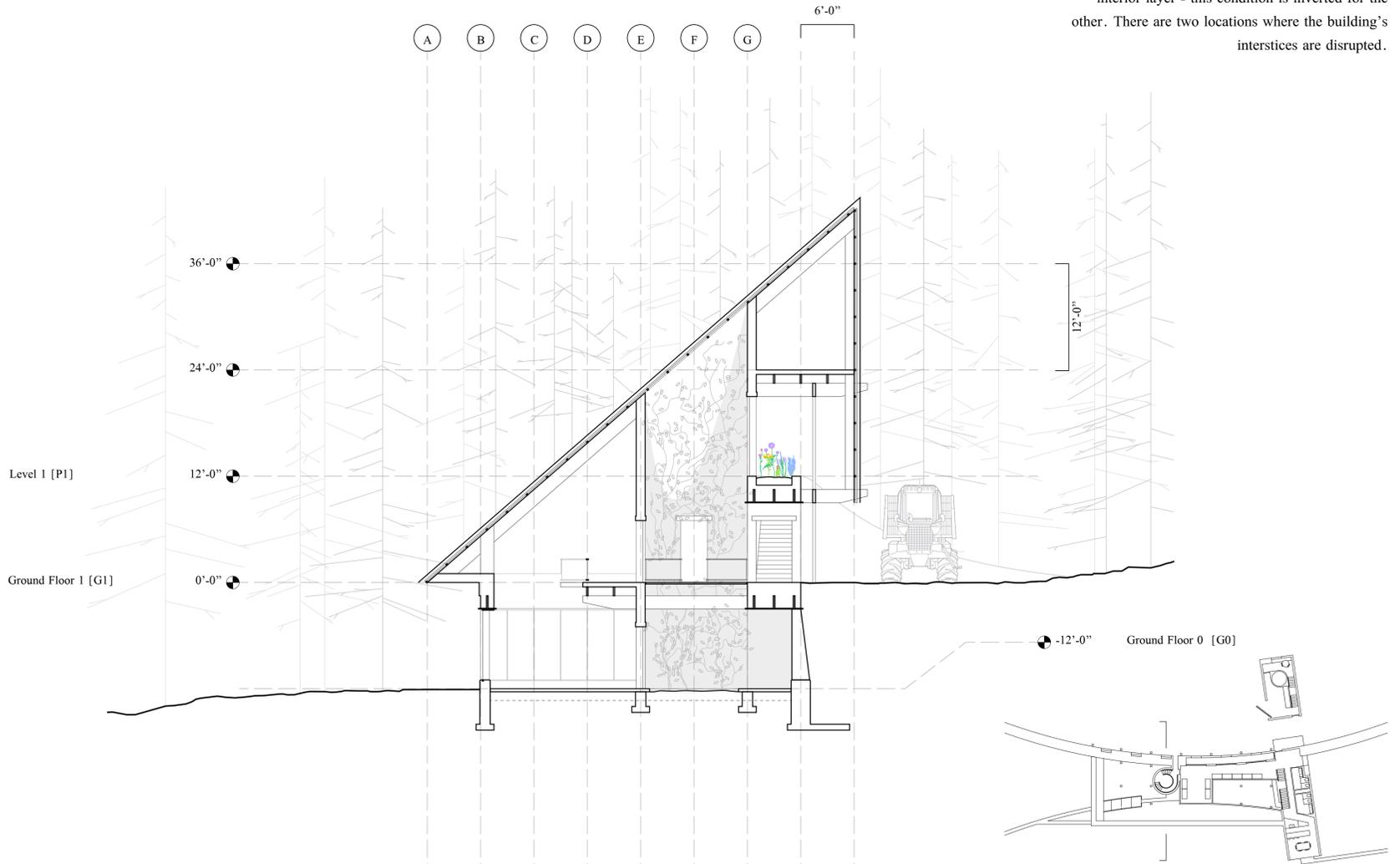


GARDEN CHAMBER

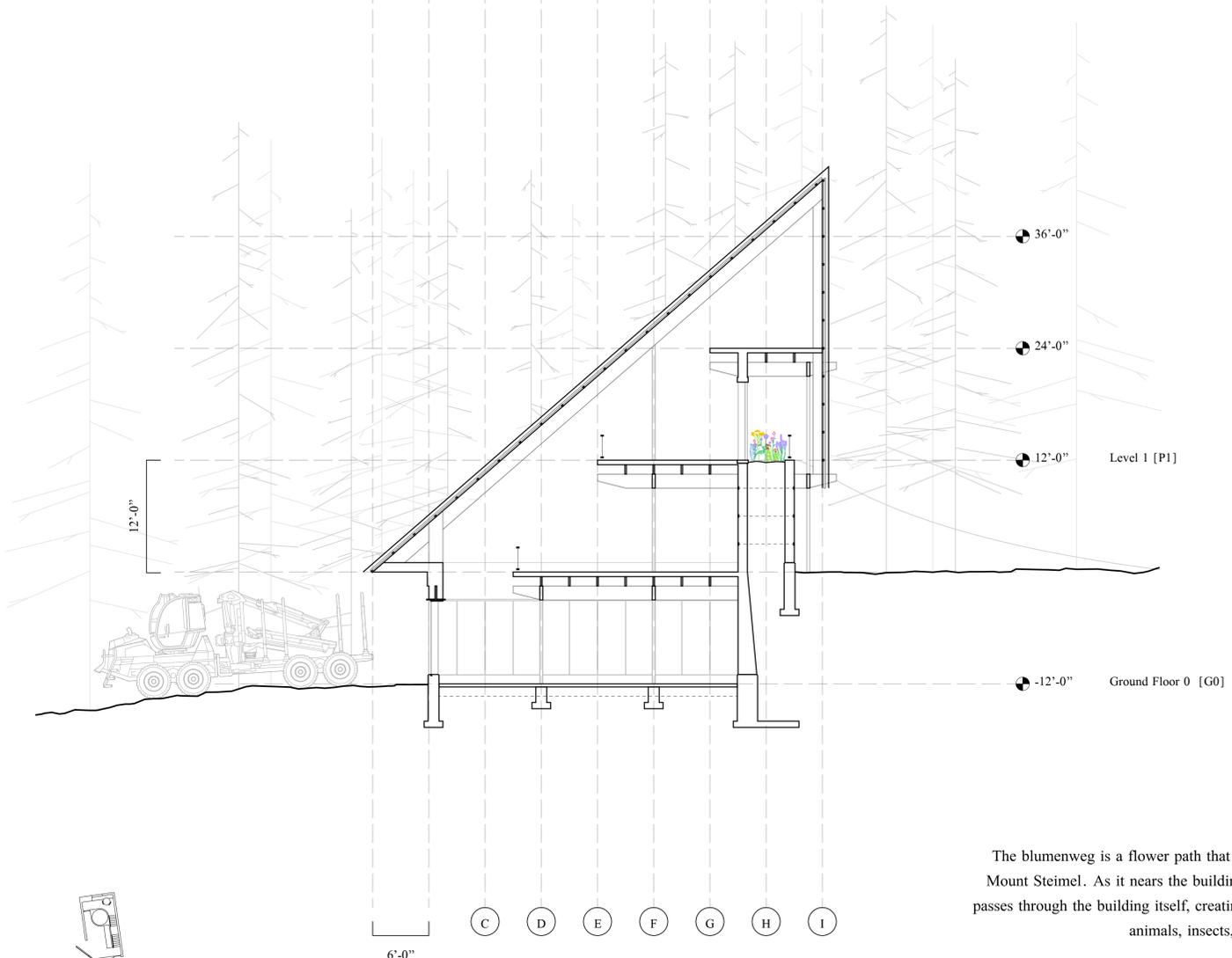
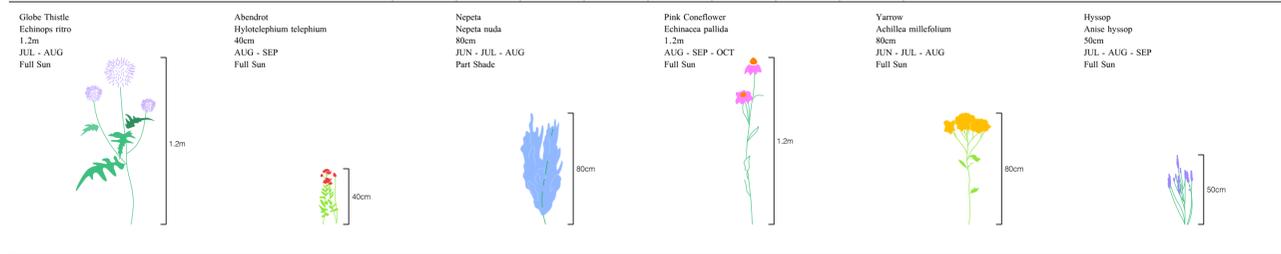
The garden chamber is an internally located cylindrical stairwell that passes directly into the soil, and thus becomes a space for both humans, and plants. The garden chamber is a bypass allowing pedestrians to move through the blumenweg without walking all the way around it

The building section can be thought of as an outer canopy, and an inner skin.

The dual skin creates interesting potentials in the shared boundary condition between exterior and interior layer - this condition is inverted for the other. There are two locations where the building's interstices are disrupted.

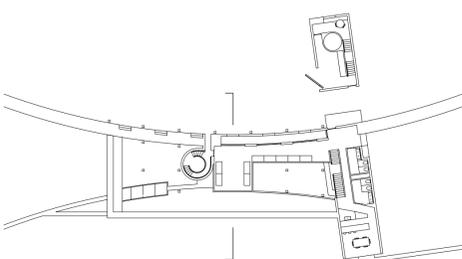


possible plantings on the Blumenweg



BLUMENWEG

The blumenweg is a flower path that follows the contours of Mount Steimel. As it nears the building the path rises up and passes through the building itself, creating a corridor for plants, animals, insects, and other organic life.







Echinacea



Hyssopus



Echinops

PROGRAM

FLOOR PLAN [G0]: 1'-0" = 1/8"

Heavy Volume [Right Volume]

- H1 Main Entrance [Conditioned]
- H2 Threshold
- H3 Technical [Mechanical]
- H4 Unisex Toilets
- H5 Locker Room
- H6 Showers
- H7 Sauna

Light Volume [Left Volume]

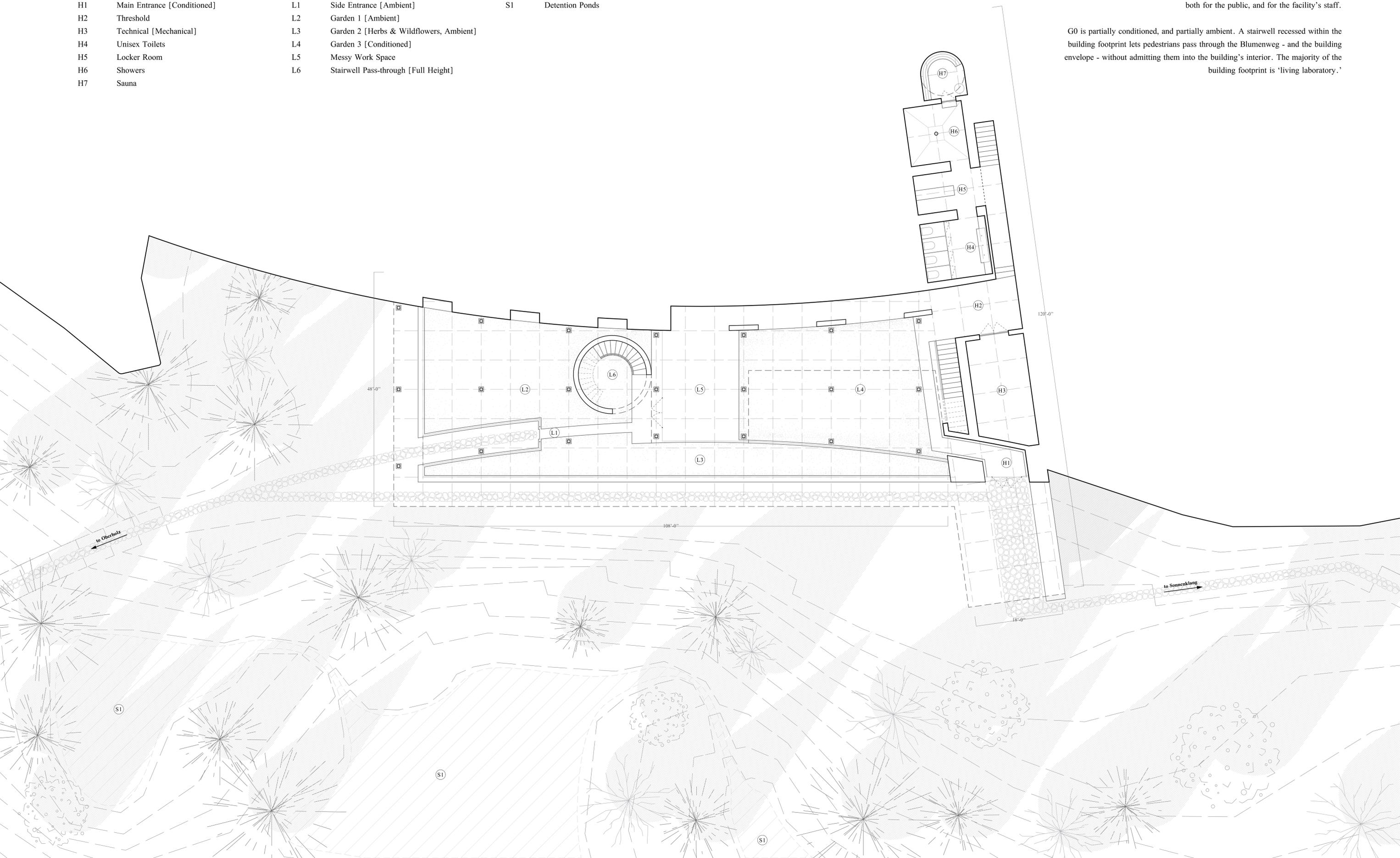
- L1 Side Entrance [Ambient]
- L2 Garden 1 [Ambient]
- L3 Garden 2 [Herbs & Wildflowers, Ambient]
- L4 Garden 3 [Conditioned]
- L5 Messy Work Space
- L6 Stairwell Pass-through [Full Height]

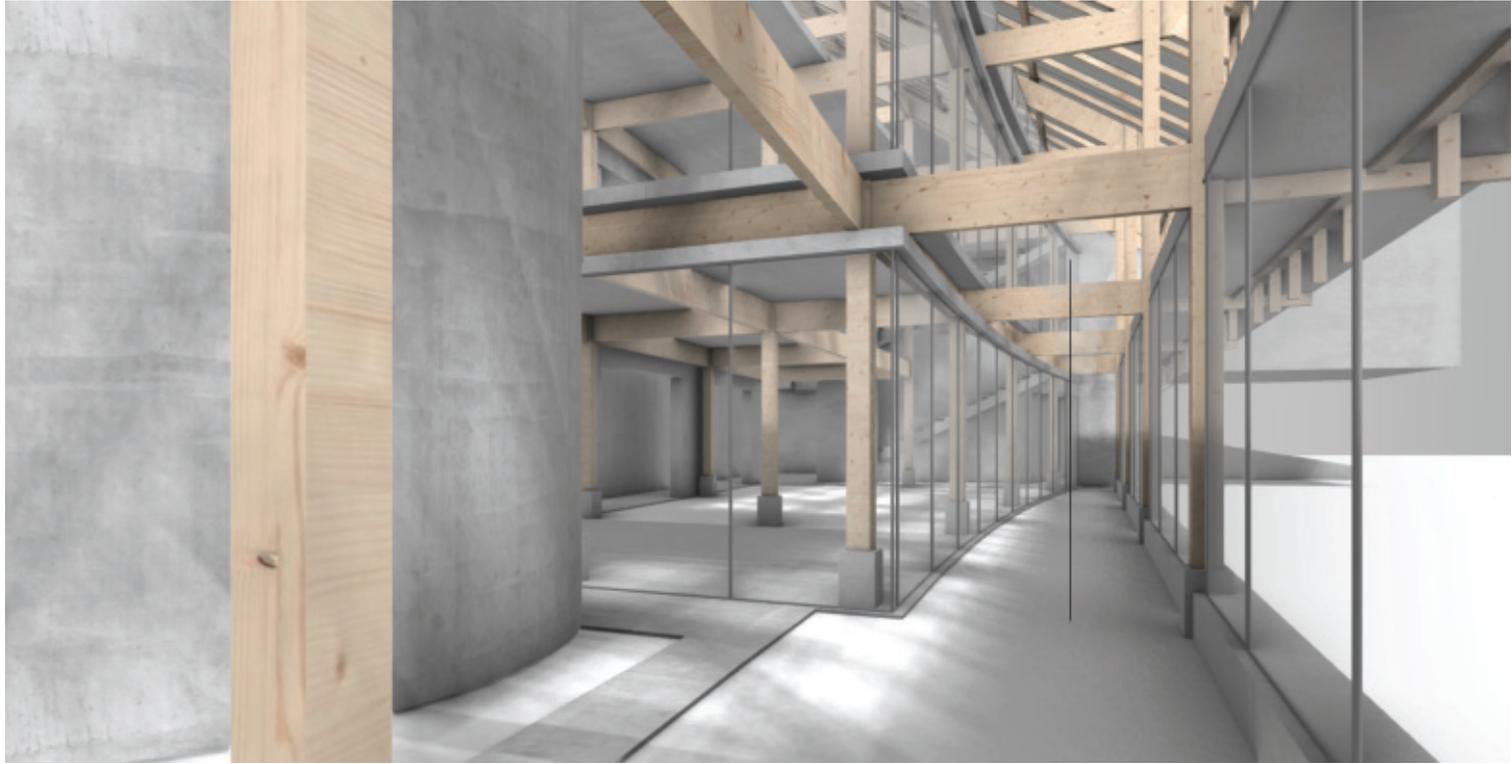
Site

- S1 Detention Ponds

The ground floor [G0] acts as the primary entrance to the Soil Research Institute both for the public, and for the facility's staff.

G0 is partially conditioned, and partially ambient. A stairwell recessed within the building footprint lets pedestrians pass through the Blumenweg - and the building envelope - without admitting them into the building's interior. The majority of the building footprint is 'living laboratory.'





PROGRAM

Heavy Volume [Right Volume]

- H1 Kitchen
- H2 Toilet Room 1
- H3 Toilet Room 2
- H4 Workshop [Monitoring Teams]
- H5 Mudroom [Access to Locker Room]
- H6 Lightwell [to Sauna]
- H7 Vehicle Storage [XUV]

Light Volume [Left Volume]

- L1 Open Office [Ambient]
- L2 Lightwell [to Garden 3]
- L3 Stairwell Pass-through [Full Height]
- L4 Garden 1 [Below]
- L5 Garden 2 [Below]
- L6 Garden 3 [Below]

Site

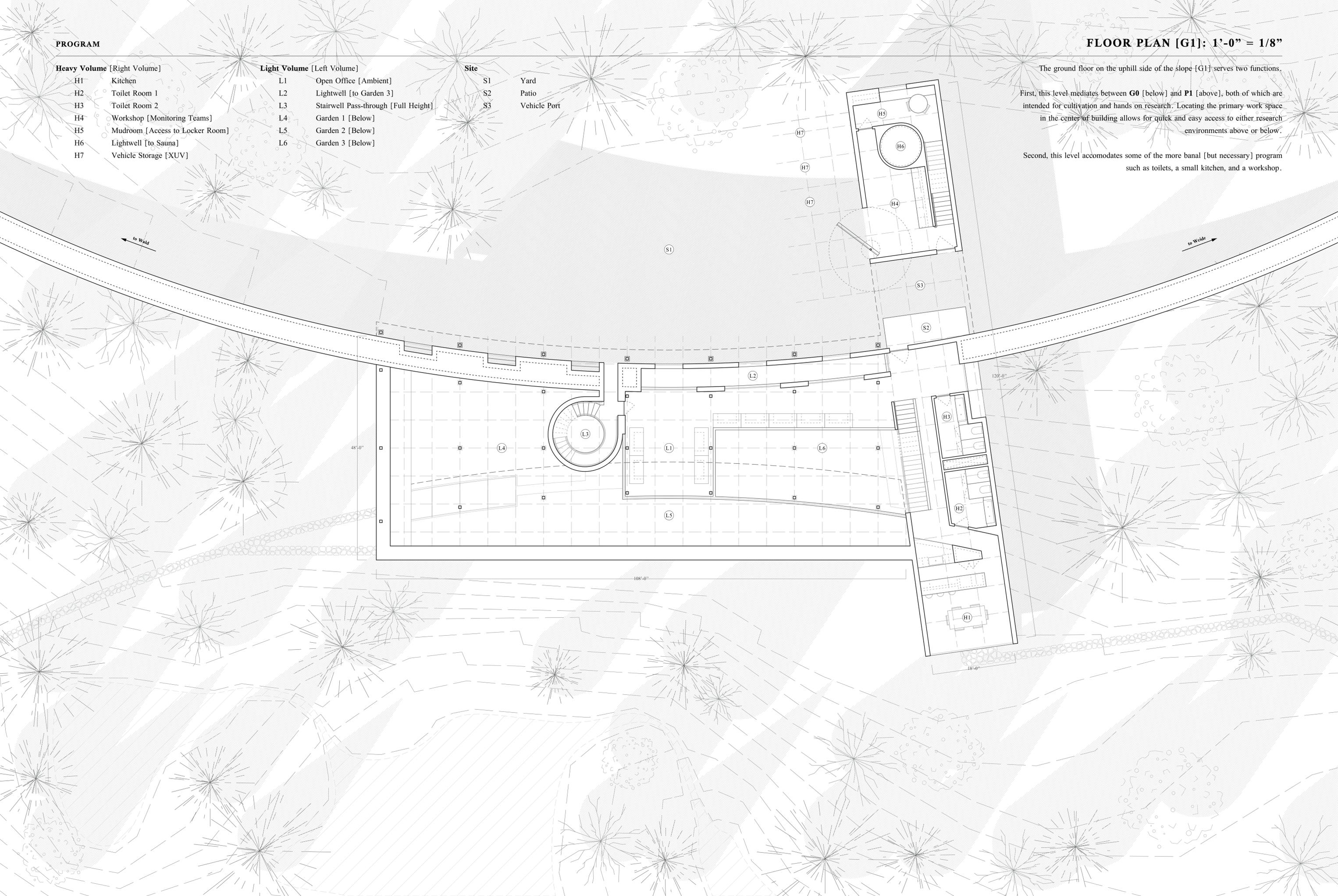
- S1 Yard
- S2 Patio
- S3 Vehicle Port

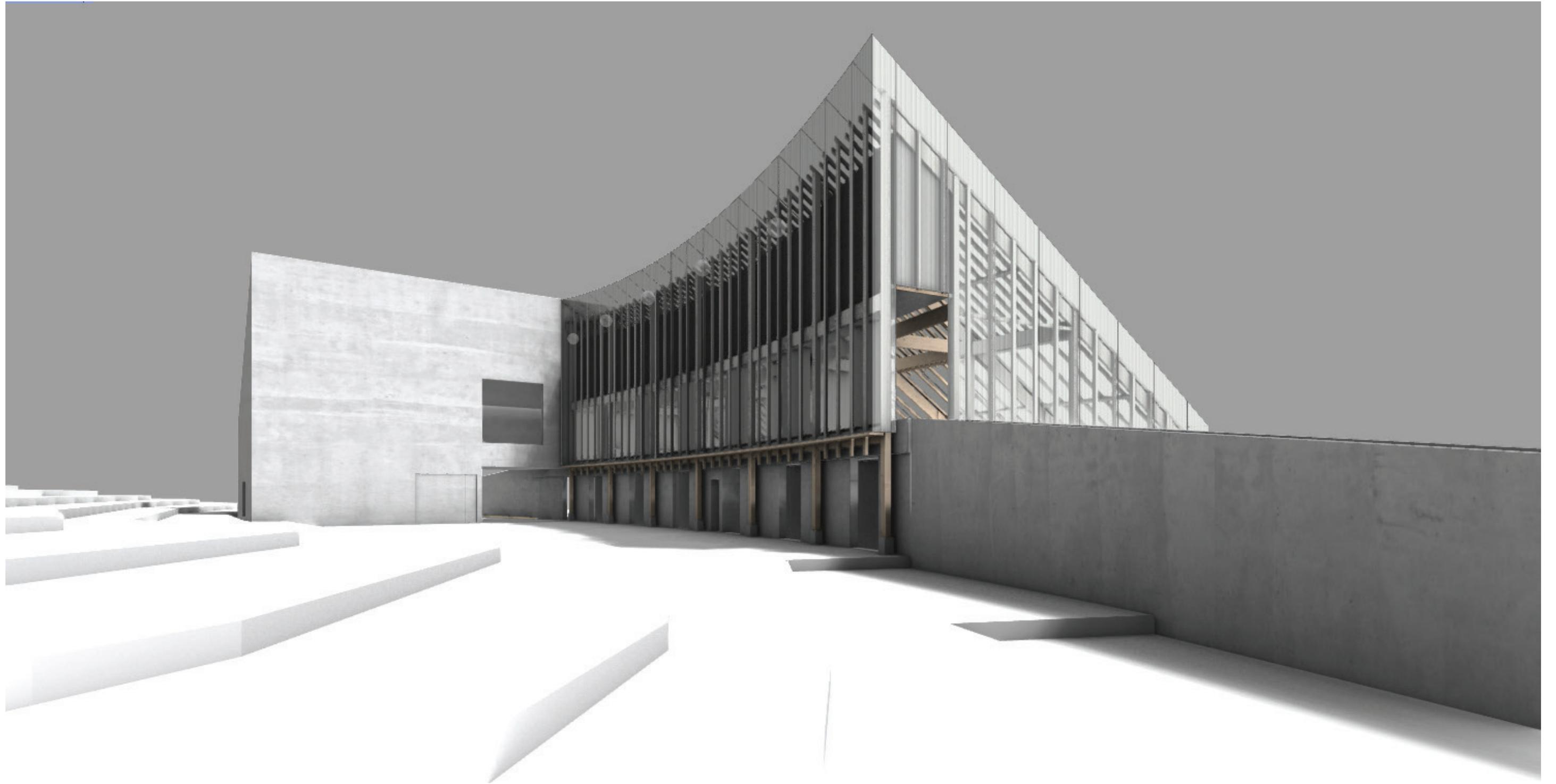
FLOOR PLAN [G1]: 1'-0" = 1/8"

The ground floor on the uphill side of the slope [G1] serves two functions.

First, this level mediates between **G0** [below] and **P1** [above], both of which are intended for cultivation and hands on research. Locating the primary work space in the center of building allows for quick and easy access to either research environments above or below.

Second, this level accommodates some of the more banal [but necessary] program such as toilets, a small kitchen, and a workshop.





PROGRAM

Heavy Volume [Right Volume]

- H1 Presentation Room
- H2 Toilet Room 1
- H3 Toilet Room 2
- H4 Broom Closet
- H5 Soil Sterile Lab [Soil Health Team]
- H6 Growth Chambers
- H7 Cold Storage [Organic Samples & Cultures]
- H8 Vestibule [Access to Cold Storage]
- H9 Lightwell [to Sauna]

Light Volume [Left Volume]

- L1 Greenhouse [Conditioned]
- L2 Blumenweg [Flower Path]
- L3 Stairwell Pass-through [Full Height]
- L4 Deck & Messy Work Space [Ambient]

FLOOR PLAN [P1]: 1'-0" = 1/8"

The third floor is where the landscape and the building converge. The Blumenweg passes through the building at this scale. It is both an aesthetic feature and an additional experimental planting location.

The Blumenweg's adjacency to the Greenhouse allows plants to be grown in a controlled environment until mature enough to be relocated onto the Blumenweg, or out into the site itself.

In this same vein of thought the Soil Laboratory and Cold Storage sit directly above the Workshop, which is the headquarters for the Satellite Monitoring teams. If sample specimens are collected in the field they can be brought back to the SRI for storage, inspection or testing.

